

CLAIMS:

We claim:

1 1. A method for fabricating an optical medium readable by
2 an optical reader, said method comprising the steps of:

3 (a) molding a substrate so as to have a first major
4 surface with information pits and information lands thereon and a second
5 major surface that is relatively planar;

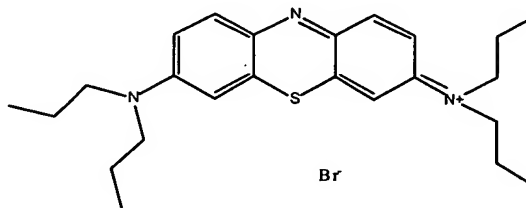
6 (b) applying a transient optical state change security
7 material capable of converting from a first optical state to a second optical
8 state upon exposure to the laser of said optical reader to at least a position of
9 said first major surface;

10 (c) applying a reflective material over the first major
11 surface so as to cover said information pits and information lands;

12 wherein the transient optical state change security material comprises [7-
13 (dipropylamino)phenothiazin-3-ylidene]dipropylamine.

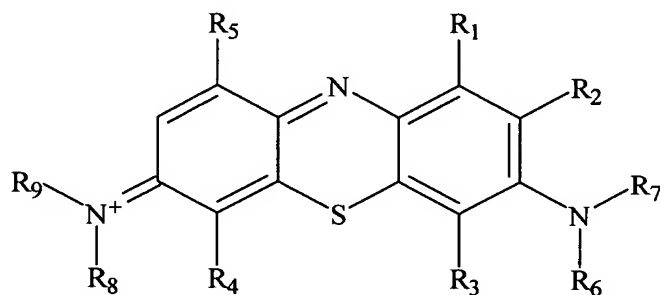
1 2. [7-(dipropylamino)phenothiazin-3-ylidene]dipropyl-
2 amine.

1 3. A compound of the formula:



2 or other salt thereof.
3

4. A composition comprising:
 a transient optical state change security material capable
 of existing in a first unactivated state and a second activated state on said first
 or second major surface, said transient optical state security material
 comprising a compound of formula I:



X⁻

I.

where R₆, R₇, R₈, and R₉ are alkylamino and R₁, R₂, R₃, R₄ and R₅ are selected
 from the group consisting of hydrogen, alkyl, aryl, alkoxy, thioalkoxy,
 alkylamino, nitro, amino and halogen; and X is selected from the group
 consisting of Cl, Br, I, Chlorate, Mesylate, Tosylate, triflate, ethoxylate,
 methoxylate and any other anion, and

an electron transfer agent.

5. The composition of claim 4 wherein the compound of
 formula I is [7-(dipropylamino)phenothiazin-3-ylidene]dipropyl-amine.

6. The composition of claim 4 wherein the electron
 transfer agent is selected from the group consisting of: triethanol amine,
 diethanol amine, TMG, DMEA, DMEA, TMED, EDTA, Bis-Tris, p-
 tolylimido diethanol, N-tert-butyl diethanol amine, 4-morpholine ethanol, 1,4-
 bis-2-hydroxyethyl piperazine, bicine, BES, 3-Pyrrolidino-1,2-propanediol, 1-
 Amino-3,3-diethoxypropane, (S)-3-tert-Butylamino-1,2-propanediol, DL-

7 Isoproterenol sulfate dihydrate, N,N-Bis(2-hydroxyethyl)-3-methoxyaniline,
 8 1,1'-[[3-(Dimethylamino)propyl] imino]bis-2-propanol, Triethanolamine
 9 Ethoxylate, 2,2'-(4-Methylphenylimino)diethanol, Triisopropanolamine, 2-[[2-
 10 [2-(dimethylamino)ethoxy]ethyl]methylamino] ethanol, Triethanolamine
 11 Hydrochloride, N-phenyldiethanolamine, 1-[N,N-Bis(2-hydroxyethyl) amino]-
 12 2-propanol, N-t-Butyldiethanolamine, N-Butyldiethanolamine , 3-Morpholino-
 13 1,2-propanediol, N,N-Bis(2-hydroxyethyl)ethylenediamine, 3-(Diethylamino)-
 14 1,2-propane -diol, 4-(3-hydroxypropyl)morpholine, N-Ethyldiethanolamine, 4-
 15 (2-Hydroxyethyl) -morpholine, N-Methyldiethanolamine, 3-morphonlino-1,2-
 16 propanediol, 3-diisopropyl -amino-1,2-propanediol, 3-(dimethylamino)-1,2-
 17 propanediol, 3-piperidino-1,2-propanediol, 3-(diethylamino)-1,2-propanediol,
 18 dropropizine.

1 7. The composition of claim 6 wherein the compound of
 2 formula I is [7-(dipropylamino)phenothiazin-3-ylidene]dipropyl-amine.

1 8. The composition of claim 4 further comprising a
 2 polymer.

1 9. The composition of claim 8 wherein the polymer is
 2 selected from the group consisting of: polyHEMA and hydrolysed PVA.

1 10. The composition of claim 4 wherein the electron
 2 transfer agent is chemically linked to a polymeric structure.

1 11. The composition of claim 10 wherein the electron
 2 transfer agent-polymer has a molecular weight in the range of about 50 – 100
 3 KD.

1 12. The composition of claim 11 wherein the electron
 2 transfer agent-polymer is soluble in methoxy propanol.

1 13. The composition of claim 10 wherein the electron
2 transfer agent is chemically linked to the polymer via a bis(2-hydroxyethyl)
3 amino functionality.

1 14. An optical medium comprising the compound [7-
2 (dipropylamino)phenothiazin-3-ylidene]dipropyl-amine wherein the
3 compound when applied to the optical medium it is detectable on said optical
4 medium by an optical reader producing a wavelength of from about 630 nm to
5 about 660 nm by a transient change in optical state from an initial optical state
6 to a second optical state.

1 15. The optical medium of claim 14 wherein the compound is
2 associated with an optical data deformation in a manner such that the read of
3 the optical data deformation is different when the compound is in its initial
4 optical state and its second optical state.

1 16. A method for authenticating an optical medium having a
2 number of data deformations thereon, said method comprising the steps of:

3 (1) providing for a complementary data state onto a
4 portion of said optical medium;

5 (2) detecting said complementary data state on said
6 portion of said optical medium.

7 (3) authenticating said optical medium upon detection
8 of said complementary data state on said portion of said optical medium;

9 wherein the complementary data state is produced using a
10 transient optical state security material comprising [7-
11 (dipropylamino)phenothiazin-3-ylidene]dipropyl-amine.

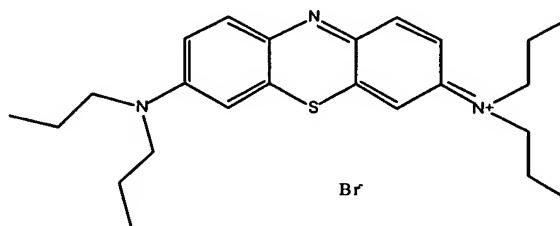
1 17. The method of claim 16 wherein said complementary data
2 state entails a change from one valid data state to a different valid data state.

1 18. The method of claim 16 wherein said complementary data
2 state entails a change from one erroneous data state to a different erroneous
3 data state.

1 19. The method of claim 16 wherein said complementary data
2 state entails a change from a valid data state to an erroneous data state.

1 20. The method of claim 16 wherein said complementary data
2 state entails a change from an erroneous data state to a valid data state.

1 21. An optical disc comprising a compound of formula:



2
3
4 or other salt thereof.

1 22. An optical disc comprising a composition having:

2 an electron transfer agent; and

3 a dye capable of being reduced by said electron transfer agent
4 and activated by a wavelength of between about 630 nm to about 660 nm to
5 convert from one optical state to a second optical state.

1 23. The optical disc of claim 22 wherein the electron transfer
2 agent is selected from the group consisting of: triethanol amine, diethanol
3 amine, TMG, DMEA, DEMEA, TMED, EDTA, Bis-Tris, p-tolylimido
4 diethanol, N-tert-butyl diethanol amine, 4-morpholine ethanol, 1,4-bis-2-
5 hydroxyethyl piperazine, bicine, BES, 3-Pyrrolidino-1,2-propanediol, 1-

6 Amino-3,3-diethoxypropane, (S)-3-tert-Butylamino-1,2-propanediol, DL-
 7 Isoproterenol sulfate dihydrate, N,N-Bis(2-hydroxyethyl)-3-methoxyaniline,
 8 1,1'-[[3-(Dimethylamino)propyl] imino]bis-2-propanol, Triethanolamine
 9 Ethoxylate, 2,2'-(4-Methylphenylimino)diethanol, Triisopropanolamine, 2-[[2-
 10 [2-(dimethylamino)ethoxy]ethyl]methylamino] ethanol, Triethanolamine
 11 Hydrochloride, N-phenyldiethanolamine, 1-[N,N-Bis(2-hydroxyethyl) amino]-
 12 2-propanol, N-t-Butyldiethanolamine, N-Butyldiethanolamine , 3-Morpholino-
 13 1,2-propanediol, N,N-Bis(2-hydroxyethyl)ethylenediamine, 3-(Diethylamino)-
 14 1,2-propane -diol, 4-(3-hydroxypropyl)morpholine, N-Ethyldiethanolamine, 4-
 15 (2-Hydroxyethyl) -morpholine, N-Methyldiethanolamine, 3-morphonlino-1,2-
 16 propanediol, 3-diisopropyl -amino-1,2-propanediol, 3-(dimethylamino)-1,2-
 17 propanediol, 3-piperidino-1,2-propanediol, 3-(diethylamino)-1,2-propanediol,
 18 dropropizine.

1 24. The optical disc of claim 22 wherein the molecules of said
 2 dye of said composition do not substantially aggregate together.